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ABSTRACT

The aim of this study was to describe and compare the socio-economic factors that can be expected to influence the education system in Portugal, where urbanization has been very slow. The report examines basic needs in Portugal's 18 districts and makes recommendations about resource allocation to planners of adult education programs. Extensive tables and graphs provide data, by district, on population; substandard housing; number of inhabitants per physician and per hospital bed; health index based on child mortality and maternal death rates; index of accessibility based on kilometers of road and population density; access to culture via radio, television, libraries, and museums; and participation in trade unions and elections. A physical quality of life index based on infant mortality, life expectancy, and illiteracy rate is also provided. Several models are presented that explore the relationships among these indicators and both adult literacy and school enrollment. Trend analysis is used to predict literacy rates for each district in the year 2000. The districts are then grouped according to socioeconomic development characteristics and prioritized with regard to need for adult education activities. Having demonstrated the interrelationships between various development variables and education, this report recommends that the most needy districts receive an integrated program providing resources to improve housing, health, infrastructure, industrial or agricultural production, and literacy. (SV)

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BASIC NEEDS AND EDUCATION IN PORTUGAL

Thord Erasmie

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DEPARTMENT OF EDUCATION
THE PORTUGAL PROJECT
DOCUMENT NO. XIII

BASIC NEEDS AND EDUCATION IN PORTUGAL

by

Thord Erasmie

Linköping, Sweden 1981-02-12

LINKÖPING UNIVERSITY
DEPARTMENT OF EDUCATION
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PREFACE

During the time that I have been working with the Portugal project - for almost four years now - I have been surprised by the big regional differences in Portugal in respect of level of industrialization, productivity and general educational structure.

I have travelled a lot in the various parts of the country and this has given me an opportunity to make myself familiar with the conditions in the regions. A village in Tras-Os-Montes, for example, has not only a particular ethnological structure; it has also an infrastructure and a cultural system that is specific and unique. Equally unique,but totally different compared to the village in Tras-Os-Montes,is the collective farming cooperative in the district of Beja.

The German Portugal-researcher, professor Bodo Freund, points out in his newly published book on Portugal that Portugal has had a very slow urbanization during the 20th century in comparison to other European countries. Thus, Portugal has only got two cities, Lisbon and Porto. The central places consist mainly of medium-sized or small towns and market places. These central places differ a lot from region to region in respect of structure and development.

The industrial area around the mouth of the river Tejo is centered upon the city of Lisbon and upon the two towns of Setubal and Santarem. It has not only a high Gross Inland Product in comparison to the rest of the country, but also a life style with an educational and cultural system that is specifically distinct from the life style in, for example, the districts of Guarda or Viseu.

These differencies between the regions are documented in official statistics. When the official statistics are to compare different regions, indicators or variables, there is always the problem of the incommensurable scales. This problem is applicable both between districts and within districts and it can be overcome, if we transform the values to a standard scale. I have done so in this paper.

My aim has been to describe and to compare the socio-economic factors that can be expected to influence education. But this paper is also about the various dimensions of welfare. Welfare, however, is both difficult to define and controversial. I have therefore preferred to use concepts like "indicators or predictors for development".

This paper is primarily intended for those responsible for the working out of the adult education programmes in the various districts. I hope that the paper may be useful as a basis for discussions concerning priorities of resources for adult education.

When I prepared this paper, I have had useful discussions with my colleagues in the project, Folke Dubell and Johan Norbeck. These discussions have brought about many additions and changes in the original manuscript. I am particularly grateful to Folke Dubell for having drawn my attention to the Physical Quality of Life Index (PQLI). Folke Dubell has also assisted me with the editorial work.

Linköping University, Sweden
February 1981

Thord Erasmie

INTRODUCTION

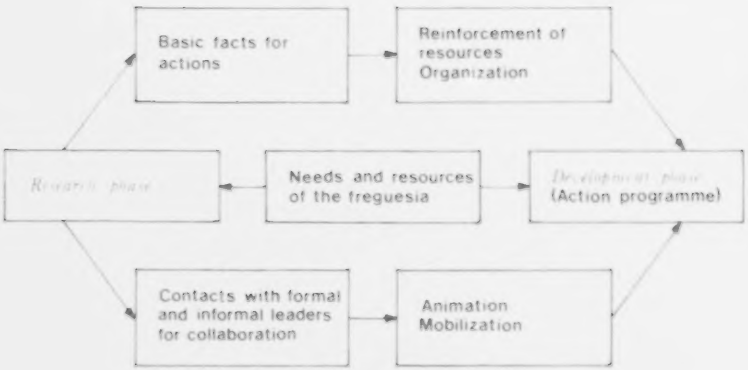
One year ago, I wrote a proposal for a feasibility study for the Braga district, which, later on was included in the final research & development design for the area.

Up to december 1980, about 30 teachers in a selected number of freguesias have collected data in order to describe resources and needs, including monographs on the freguesias that have been investigated. At the turn of the year 1980/81, the organization of action programmes was planned for the freguesias concerned. The study undertaken by DGEA on needs and resources (in the following termed 'the Braga study') will be followed by new studies and by the starting of new programmes. According to PNAEBA, the whole of Portugal is to be included in the educational activities that ultimately aim at eradicating illiteracy from the country.

In order to be able to carry out PNAEBA's ambitions of studying needs and resources as well as starting activity programmes, there is a need for new strategies coupled with strict priority of economic and personnel resources.

The discussion that will be presented in this paper is based on a paradigm for development that can be seen below.

Figure 1 Interrelations between Components in a R & D-model Adopted for the Swiftcode Society of a Freguesia


Basic facts for actions
Reinforcement of resources Organization
Research phase
Needs and resources of the freguesia
Development phase (Action programme)
Contacts with formal and informal leaders for collaboration
Animation Mobilization

The concept 'development' is multi-dimensional and can be defined operatively as a process with a number of improvements in the smallscaled society (better crops, better health, reduced illiteracy etc). In the above model, 'needs and resources' are in the centre. The model thus underlines that it is the resources of the small society (in our case the frequesia) that are to be taken care of to satisfy the needs.

Through the research process, the existing needs, 'basic facts', are identified and quantified. The research also provides a basis for organising a network of future activities, that is 'contacts' in the model.

When the basic facts have been analysed, it will be apparent that resources, 'reinforcements', in addition to those already available in the frequesia, shall have to be brought in.

The network of formal and informal leaders that has been established is the base for 'Animation/Mobilization'. There is now a basis for action programmes directly related to the needs and resources of the frequesia. The model anticipates participation in 'participatory research' by those directly concerned. This means that the animation and mobilization phases are particularly important.

The model described above can be used for macro- as well as for micro analysis.

The theoretical content of the paradigm is simple. The implementation of it is, however, much more difficult.

When action programmes are to be started which need resources, one has to consider both the extent and the contents of the programmes. When making the priorities, it is necessary to observe differences in regard of the basic needs.

The main part of this paper is to deal with basic needs in Portugal. In order to go on with the PNAEBA-studies, it is, in my view, important to have defined the indicators that are fundamental to the basic needs. When priority concerning activities within the fields of adult education is to be decided upon, for the districts, concelhos and frequesias, an analysis of 'indicators' may serve as a guide.

CRITERIA TO DETERMINE LEVEL OF DEVELOPMENT

Theoretical considerations

The Basic Needs Approach is a methodology used to determine the level of development in a society. It is based on a number of indicators that have been quantified. In order to determine the standard of living of a society, the components that are decisive for the standard of living, have to be identified. The components can be divided into two groups:

a. those representing material needs

b. those representing non-material needs

Examples of material needs are food, water, houses. Non-material needs are, for example, education, democracy and social justice.

In order to be able to assess (measure in quantifiable terms) the basic needs, it is necessary to identify the indicators. These indicators must, in their turn, be related to targets. (These are often defined as the minimum requirements, e.g. of food requirements, of the content of education etc). A thorough discussion on the theory for determining Basic Needs can be found in Ghai et al (1978). Targets are the outcome to which the measurements are to be related.

Even if there is no generally accepted theory for selecting indicators, there are a few systems available that have been used to rate welfare.

At the ILO conference in 1976 there was agreement on the following eight indicators:

1. Food
2. Shelter
3. Clothing
4. Water
5. Sanitation
6. Public transports
7. Health care
8. Education and culture

A World Bank report in 1979 suggested the following indicators:

1. GNP per capita
2. Population - growth rate
3. Crude birth rate (per 1 000)
4. Crude death rate (per 1 000)
5. Employment and income
6. Health and nutrition
7. Education
8. Housing
9. Consumption

In the report 'Employment and Basic Needs in Portugal', published by ILO in 1979, they have used the following indicators:

1. Food
2. Housing
3. Health
4. Social security
5. Accessibility and transport
6. Education
7. Culture
8. Participation

As we can see, education is one of the indicators which we use to measure development or welfare. Education is fundamental and a precondition for participation in the society. But education is also a basic need in itself. This means that education could be seen as an input as well as an output variable. For example, the number of teachers is an input variabel and the ability to read is an example of an output variable.

As said before, targets must be defined for each indicator. For the concept of education we shall give an example of a minimum package of basic learning requirements. (The example is taken from Ghai et al, 1978 pp 42 - 43)

(a) positive attitudes towards co-operation with and help to family and fellow men, toward work, community and national development, toward continued learning and toward development of ethical values;

(b) functional literacy and numeracy sufficient (i) to read with comprehension a national newspaper or magazine, useful agricultural, health, and other how-to-do-it bulletins; (ii) to write a legible letter to, for example, a friend or to a government bureau requesting information; and (iii) handle important common computations - such as measurement of land and buildings, calculation of agricultural input costs and revenues, interest charges on credit and rental rates on land;

(c) a scientific outlook and an elementary understanding of the processes of nature in the particular area as they pertain to say health and sanitation, to raising crops and animals, to nutrition, food storage and preparation and to the environment and its protection;

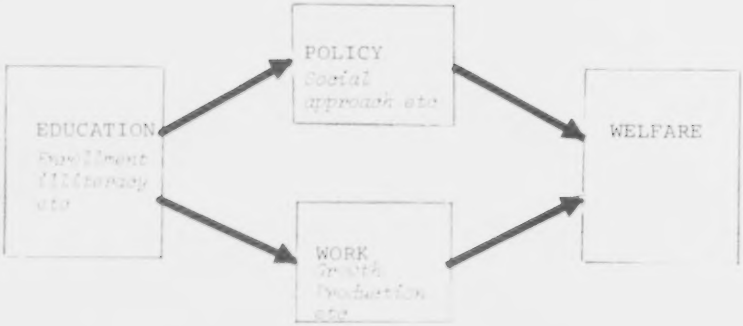
(d) functional knowledge and skills for raising a family and operating a household, including elements such as protecting family health, family planning, good child care, nutrition and sanitation; cultural activities and recreation, care of the injured and sick, intelligent shopping and use of money, making clothes and other consumption goods, house repairs, and environmental improvements, growing and preserving food for family consumption;

(e) functional knowledge and skills for earning a living, including not only skills required for a particular occupation but also knowledge of a variety of locally useful common skills for agriculture and non-farm use;

(f) functional knowledge and skills for civic participation, including some knowledge of national and local history and ideology, and understanding of one's society; awareness of government structure and functions; taxes and public expenditures; available social services; rights and obligations of individual citizens; principles, aims and functioning of co-operatives and of local voluntary associations.

Analysing the various indicators, one finds that these can function as dependent variables as well as independent ones. It is possible to think of more than one model for the relation between the indicators. The basic assumption is that the indicators constitute predictors or independent variables. These indicate welfare, and welfare is the dependent variable. The rate of welfare will in this case be the sum of the positive components of the predictors. But it is equally logical to give one of the predictors, for example education, more power than

the others and thereby produce a general predictor. In the World Bank's policy paper 'Education' (April 1980), correspondence between education and work is stressed. Thus, it is possible to describe a chain of variables which together lead to economic growth and development.

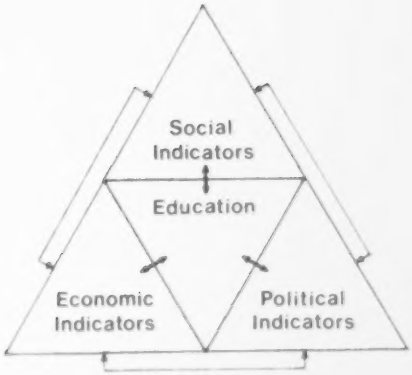


In the above model which is very simplified, education has become the predictor that influence the policy on social development (for instance provision of health care, development of programmes for better food). But, at the same time, good education results in increased job efficiency, better quality and higher production - factors that together generate and create welfare.

In the discussion above, 'education' has been seen as an independent variable or predictor. It is, however, also possible to treat 'education' as a dependent variable, which means that a number of social, political and economic indicators influence education.

Therefore, the paradigm may look as in figure 2 on the next page.

Figure 2. The Relations between Indicators and Education



Thus, education depends on the social, economic and political development of the society. But, at the same time, that development is influenced by 'education'. The two-way arrows in the paradigm show precisely that situation.

When the PNAEBA-plan is to be extended, the selection of areas (districts) will depend on the level of development, which is determined by various types of indicators. The theoretical base of this paper is the model given above. In the following, I will describe various types of indicators, which, each of them, influences 'education' and is influenced by 'education'. My main source is the ILO report Employment and Basic Needs in Portugal (1979). The ILO report is based on statistical data that, in certain cases, are more than ten years old. This means that there is an added uncertainty in respect of the conclusions. As I will compare the various districts, the mistake that is caused by old figures will, however, be reduced and of little importance for the conclusions. This is so because there is reason to believe that the various districts have had a similar development over the last ten years. When I have gone through

the statistical data in the ILO report, I have found unreasonable figures which are probably due to printing errors or to errors in the data processing. To the extent that I have been able to check the figures, I have done so and corrected them. Let me give an example.

Summary Index for Total Non-Material Needs Index figure for Portugal is 100. For the Aveiro district, 208 is given, which is a considerably higher figure than the index for Lisbon, which is 129. My judgement is that the correct figure for Aveiro should be 108 instead of 208.

These corrections, based on re-counts, judgements on what seems reasonable or comparisons with other sources, have, however, very little importance for conclusions concerning educational activities in the various districts.

Definition of indicators

Food

The indicator Food can be expressed in figures, quantitatively as well as qualitatively. The calorie intake per capita and day is a quantitative figure. Protein and vitamin consumption is a qualitative measurement.

According to ILO (1979) the calorie intake is satisfactory. The mean for the 1970s has been about 2800 calories per day and capita. There are no figures available as to the differences between the districts. Protein consumption shows great differences between urban and rural areas. Half the population (49 %) has a lower consumption of protein than recommended by ILO and WHO (80 g per capita and day).

Food consumption is dependent on income. The ILO report states that even if the average figures for food consumption are satisfactory, there are still big differences and a big part of the population suffer from nutritional deficiencies.

In conclusion it is clear that the data base needs to be improved in order that the extent of malnutrition and its causes can be mapped. Nevertheless, it is also clear that in 1975 a large proportion of the Portuguese population were underfed or in danger of malnutrition. It seems also that despite the Revolution the situation has not improved much, particularly for agricultural workers. All this implies that considerable structural changes are still needed in Portugal.
(Ibid pp 32-33)

In my comparisons between 'education' and various indicators, I will exclude the indicator 'food'. The reason is that the available figures are not comparable to the other indicators. This does not mean that I regard Food as a weaker indicator than the others. Studies show that the indicator Food, expressed in quantitative and qualitative measurements is the most important indicator of welfare. Comparisons between districts, rural and urban areas and between various income brackets would certainly show very big differencies in respect of calorie intake and protein consumption.

Housing

The ILO report points out that lack of housing is one of the major social problems in Portugal. The data on which this statement is based are from 1970. The report comments:

> Although the latest information available regarding the overall housing situation dates from 1970, there is no reason to believe that it has changed for the better; in fact the reverse is more likely.
> (Ibid p 33)

In the table on the next page, the total number of families and families with sub-standard dwellings are given for each district in absolute and relative numbers.

Table 1. Housing Deficiencies, 1970

Districts	Number of families		Sub-standard dwellings	Per cent
	Total			
Aveiro	132 045		88 105	67
Beja	61 920		51 865	83
Braga	130 870		97 200	75
Braganza	48 510		42 850	88
Castelo Branco	78 200		62 210	79
Coimbra	117 905		89 480	76
Évora	55 755		39 020	70
Faro	85 170		58 425	68
Guarda	64 240		55 100	86
Leiria	108 095		81 795	76
Lisbon	468 215		107 245	23
Oporto	310 840		68 991	22
Portalegre	47 815		34 940	73
Santarem	132 830		94 495	71
Setubal	140 470		54 385	39
Viana do Castelo	63 995		49 935	78
Vila Real	66 690		57 315	85
Viseu	110 455		95 045	86
Total	2 224 020		1 313 408	59

Has the housing shortage been reduced in the 1970s? According to the ILO report there has been a big increase in the production of new houses. It has, however, mainly been reserved for those returning from the old colonies. The result is that the housing situation in 1977 (according to data collected by the ILO report) is by and large the same as in 1970.

(It will not be possible here to give an account of the Portuguese housing programme. As this section aims at describing the indicators, I have been forced to leave out many interesting approaches concerning the indicators. He who has got a special interest in these matters may consult the references at the end of this paper).

Health

Health can be defined in many ways. When I use 'health' as indicator, I have in the analysis worked with a summary index based on the child mortality rate, maternal death rate and unassisted confinement.

When summing up the three indexes weights have been used. From a methodological point of view, weighting can always be criticized. Weighting or non-weighting is, however, of no importance for our purpose in this paper.

(In this paper the various districts of Portugal are to be compared. It should be noted that Portugal, in comparison to most other European countries has a very high mortality rate for certain deseases. The ILO report comments:

The lack of statistics as yet precludes the attribution of morbidity in the various sectors of the population to incorrect or insufficient diets. However, a relationship can be established between several main groups of diseases still current in Portugal and malnutrition.
(Ibid p 43)

As the index used gives a too rough measurement of health, according to the way I see it, I have supplemented the index with the following sub-indicators: number of inhabitants per physician and number of inhabitants per hospital bed.

In the table on the next page, the indicators are given as well as the ranking order for the various districts.

Table 5. Health Situation Indicated by the Input Variables: Physicians, Hospital Beds and Summary Index based on Child Mortality Rate, Maternal Death Rate and Unassisted Confinements.

	Number of inhabitants per physician [1]		per hospital bed [1]		Summary index [2]	
District	Number	Rank	Number	Rank		Rank
Aveiro	1752	5	440	18	28.02	10
Beja	2406	14	307	13	32.53	13
Braga	2285	10	233	8	42.07	16
Braganza	2354	12	310	14.5	55.60	17
Castelo Branco	2213	8	265	9	24.58	8
Coimbra	436	2	88	1	15.25	2
Evora	1864	7	138	4	17.82	5
Faro	2283	9	305	12	23.27	7
Guarda	2367	13	171	5	33.26	14
Leiria	2430	15	300	11	13.88	1
Lisbon	378	1	119	3	20.17	6
Oporto	628	3	204	7	31.34	12
Portalegre	1745	4	108	2	25.87	9
Santarem	2292	11	294	10	16.78	4
Setubal	1843	6	437	17	15.94	3
Viana do Castelo	2874	18	310	14.5	29.55	11
Vila Real	2695	17	424	16	65.41	18
Viseu	2675	16	190	6	39.58	15
National average	1971		258		27.20	

1) 1975

2) 1973 - 75

The summary index is based on three variables as mentioned before and it is high in all districts in comparison to other European countries.

Two of the three variables are compared below:

Table 3. Child Mortality Rate and Maternal Death Rate for Portugal, Spain, France and Sweden

Countries	Child mortality rate	Maternal death rate
Portugal	38.9[1)]	0.4[1)]
Spain	19.6[1)]	0.27[2)]
France	14.4[1)]	0.24[2)]
Sweden	9.2[1)]	0.07[1)]

1) 1975

2) 1973

Child mortality rate = 0/00 of the sum of the neonatal death rate and the postneonatal death rate

Maternal death rate = the number of maternal deaths for 1 000 live births

The input variables, which I present together with the Summary index, could be compared to the WHO recommendation which suggests a minimum of 1429 people per physician and 200 per hospital beds (Kohn R & White, K.L., Health care: An International Study, WHO, 1976). The corresponding figures for Portugal (national averages) are 1971 and 258. It should be noted that the number of hospital beds and doctors is just slightly below the recommendations of WHO.

In the model where all indicators will be included, the 'health' indicator will be stated with the input and output variables separated.

Health can of course be described by other output variables than those mentioned here. I am sure that variables like 'individual health programmes' (cp the Mogadouro project) would be of interest in order to shed light on the concept health. Unfortunately, individual activities and programmes cannot be included because they cannot be given numerical values. The health teams that have been organised in the Mogadouro concelho in the district of Braganza will certainly give a more positive picture of the health situation in this particular concelho. There will, however, be no change in the ranking order between the districts with regard to the Health Summary Index.

Accessibility and Transport

Accessibility and transport concern the physical infrastructure and have two dimensions. One is the effectiveness of the transport system in providing access to the existing facilities. The other is the spatial distribution of the facilities themselves. The geographical access can be measured on a map. With an assumption of an area of coverage, for example, a diameter of x kilometres, for instance the existing facilities can be encircled to see what proportion of a country is covered. With the additional help of a population density map the proportion of the population uncovered by these circles can be estimated. This proportion is an access indicator (See Ghai, D.P. and Alfthan, T., 1978, pp 41 - 42).

The measurements that can be given for accessibility, like, for example, roads measured in kilometres or kilometres of roads per square kilometre are very rough. The indicator 'accessibility and transport' has, however, developed very differently in various parts of the country during 1970 - 75, (ILO Employment and Basic Needs in Portugal, 1979, pp 52 - 57). Transport facilities have improved a lot along the north-south coastal axis, while, in the hinterland, facilities are still

inadequate. The number of private cars has increased, while public transport facilities have decreased.

In terms of the execution of a real policy of satsifying the basic needs of the poorest groups, two other observations give rise for concern. First, the increase in the number of private cars has been twice as great as that of public inter-urban passenger transport vehicles, the coefficient of utlisation of which has even slightly decreased. Second, the public sector has proved unable to meet the full demand for goods transport: the railway system (tonnage carried has decreased considerably) and the Rodoviária Nacional or State Haulage Corporation (which only has 9.5 per cent of total capacity) have left this market in the hands of some 3,000 private undertakings. (Ibid p 34)

A measurement of 'accessibility and transport' is the density of the road network. This is, according to my point of view, too rough a measurement to describe the indicator 'accessibility and transport'. I have therefore created an index of the sum of inhabitants per square kilometre and the number of kilometres of roads per square kilometre. Density is, per se, a measurement of social and economic development in Portugal. The greater density, the greater rate of development. The north-south axis along the coast in the districts of Viana do Castelo, Braga, Porto, Aveiro, Coimbra, Leiria, Lisbon and Setubal has an average density of 283 inhabitants per square kilometre, while the figure for the rest of the country is only 43 people per square kilometre. Between 75 - 100 per cent of Portugal's industries (depending on branch of industry) is located to the above mentioned districts along the north - south coast axis (Freund, B., Portugal, Länderprofile Geographische Strukturen, Daten, Entwicklungen, Stuttgart, 1979).

In order to get a reasonable measurement of the indicator 'accessibility and transport', I have included the variable 'density' by dividing inhabitants per square kilometre by 1 000. The new index 'accessibility and transport' is created through the formula

[illegible]

where [illegible] = index for accessibility and transport

[illegible] = Kilometres of roads per sq km

[illegible] = Density: inhabitants sq km

In the table below, index and ranking orders are given for the various districts.

Table 4. Index for Accessibility and Transport

District	Index	Rank
Aveiro	1.099	3
Beja	.212	18
Braga	.847	4
Braganza	.369	12
Castelo Branco	.293	15
Coimbra	.577	7
Evora	.221	17
Faro	.315	14
Guarda	.360	13
Leiria	.582	6
Lisbon	1.336	2
Oporto	1.584	1
Portalegre	.263	16
Santarem	.431	9
Setubal	.378	11
Viana do Castelo	.703	5
Vila Real	.414	10
Viseu	.513	8
Average Portugal	.460	-

The above given indexes only indicate the ranking order between the districts in regard of road network and density. The part of the infrastructure that concerns organisation, administration and personnel is only implicitly embedded in the index.

Changes in accessibility and transport are very slow in Portugal. The ILO report (Employment and Basic Needs in Portugal, 1979) stresses that strong infrastructural measures are needed in order to reach an acceptable level for the whole country.

The infrastructure can scarcely be modified in the medium term: the railway network will hardly be extended at all, and work on the road network will have to be limited to improvements in the national roads and to some extensions of the municipal roads. For example, between 1970 and 1975 no national road was built, and only 1,750 kilometres of municipal roads. To catch up by 1980 with the national average of road-network density, it would be necessary to construct three times as many roads in the interior alone.

This being so, between now and 1980 the satisfaction of basic needs which depends on an improvement in the present levels of accessibility can be improved only through a better location of the facilities, together with efforts made in each area, whether through fiscal means, savings or pilot programmes for improving infrastructure by providing work for the unemployed, and, more generally, by decentralised efforts calling on local financial and human resources.

(Ibid p 57)

Culture

The concept 'welfare' also includes access to culture. This indicator contains several parts that can hardly be compared. The input variables that can be measured are, for example, number of radio receivers, TV-sets, visits to libraries and museums, number of newspapers. In my analysis, I have included the following variables to describe the indicator 'culture':

- Radio receivers per 1 000 inhabitants
- TV-sets per 1 000 inhabitants
- Visits to libraries per 1 000 inhabitants
- Visits to museums per 1 000 inhabitants

Participation

The possibility of participation in, for example, trade unions and in national elections are important indicators of welfare. For my analysis, I have used the number of members in trade unions and the number of people entitled to vote who have participated in the 1976 elections.

Listing of indicators

In the tables below, all indicators are given for all the districts. The figures in the matrix are rough numbers or transformed values according to the description given.

Table 8: Indicators: Housing and Health

District	Housing	Health		
	Substandard dwellings[1]	Number of inhabitants per physician[2]	per hospital bed[3]	Summary index[4]
Aveiro	67	1752	440	28.20
Beja	83	2406	307	32.53
Braga	75	2285	233	42.07
Braganza	88	2354	310	55.60
Castelo Branco	79	2213	265	24.58
Coimbra	76	406	88	15.25
Évora	70	1864	138	17.82
Faro	68	2283	305	23.27
Guarda	86	2367	171	33.26
Leiria	76	2430	300	13.88
Lisbon	23	378	119	20.17
Porto	22	628	204	31.34
Portalegre	73	1745	108	25.87
Santarem	71	2292	294	16.78
Setubal	39	1843	437	15.94
Viana do Castelo	78	2874	310	29.55
Vila Real	85	2695	424	65.41
Viseu	86	2675	290	39.38

1) Per cent dwellings without piped water, electric light, bathroom with sanitary toilets, 1970

2) 1975

3) 1975

4) The summary index is composed of: a. Child mortality rate b. Maternal death rate c. Unassisted confinements 1971-1975

Table 6. The Cultural Accessibility and Transport Index

District	Access.[1] and Transp.	Culture			
		Radio[2]	TV[3]	Library[4]	Museum[5]
Aveiro	1.099	160	50	250	160
Beja	.212	160	60	450	140
Braga	.847	110	40	480	90
Braganza	.169	20	30	250	30
Castelo Branco	.293	160	70	250	30
Coimbra	.577	180	70	820	270
Evora	.221	220	100	530	500
Faro	.315	190	90	370	150
Guarda	.360	150	50	450	30
Leiria	.582	170	70	270	140
Lisbon	1.336	210	120	320	650
Porto	1.584	160	80	320	40
Portalegre	.263	230	90	250	60
Santarem	.431	160	80	340	80
Setubal	.378	170	100	170	10
Viana do Castelo	.703	110	40	220	10
Vila Real	.414	110	30	120	50
Viseu	.514	120	40	160	250

1) Accessibility and Transport index calculated by $I = \frac{(D \cdot d)}{100}$, where D = Kilometres of roads per square kilometre and d = Density (inhabitans per square kilometre), 1977

2) Radios per 1 000 inhabitants, 1975

3) TV sets per 1 000 inhabitants, 1975

4) Visits to libraries per 1 000 inhabitants, 1975

5) Visits to museums per 1 000 inhabitants, 1975

Table 7. The Indicator: Participation

District	Membership of Trade Union[1]	Election 1976[2]
Aveiro	45.2	84.8
Beja	33.2	84.1
Braga	46.1	87.8
Braganza	33.3	78.8
Castelo Branco	40.1	81.0
Coimbra	36.3	77.8
Evora	33.2	88.4
Faro	27.3	82.2
Guarda	38.7	79.0
Leiria	38.7	80.2
Lisbon	42.8	83.3
Porto	41.3	88.2
Portalegre	42.5	82.3
Santarem	38.2	82.3
Setubal	25.9	85.1
Viana do Castelo	33.8	78.9
Vila Real	27.7	77.6
Viseu	29.8	78.4

1) Membership in per cent of all employees 1975

2) Per cent voting 1976

THE RELATIONSHIP BETWEEN INDICATORS

In order to be able to compare the various indexes, they have been transformed into T-scores. The T-scores that are given in the table and diagrams below have got the same mean (50) and standard deviation (10). The following formula has been used for the transformation:

$$T = \frac{x - \bar{x}}{s} \cdot 10 + 50$$

where x = the raw score

$\bar{x}$ = the mean of the given distribution

s = the standard deviation

The numbers 10 and 50 are constants, which transform the standard score into a scale with the mean of 50 and the standard deviation of 10.

I use T-scores instead of ordinary standard scores because they are easy to compare. They are positive numbers and there is no need for decimal places.

Table 6. The indicators and the overall "Quality of Life" Index

District	Health 1)	Culture 2)	Accessibility and transport	Participation 3)	Mean Indicator	Rank	Literacy 4)	School Enrolment 5)	Mean Education	Rank
Aveiro	51	46	41	55	58	51.6	4	55	55	55	5
Beja	43	46	41	51	49	46.0	14	37	31	34	18
Braga	47	44	37	47	61	52.0	6	57	63	60	3
Bragança	41	40	45	36	42	40.8	17	40	61	50.5	9.5
Castelo Branco	45	50	43	47	52	47.4	12	40	39	39.5	16.5
Coimbra	47	69	49	60	56	55.6	3	57	58	57.5	4
Évora	39	56	41	64	55	53.2	5	42	38	40	15
Faro	51	44	41	54	41	47.6	11	42	37	39.5	16.5
Guarda	42	50	44	48	50	46.8	13	44	53	48.5	11
Leiria	47	58	56	50	47	58.8	10	45	50	47.5	12
Lisbon	71	61	69	65	54	64.8	1	64	57	50.4	2
Porto	73	57	73	56	60	63.0	2	60	64	62	1
Portalegre	48	56	42	53	54	51.6	7	39	50	44.5	14
Santarem	49	58	46	56	53	49.0	9	51	38	51	7.5
Setubal	45	49	45	49	46	50.8	8	53	51	52	6
Viana do Castelo	46	44	41	41	41	47.4	15	57	44	50.5	9.5
Vila Real	42	58	46	39	37	39.4	18	42	60	51	7.5
Viseu	42	47	48	45	39	44.2	16	40	52	46	13

1) Average of health indicators

2) Average of culture indicators

3) Average of % membership of trade unions and % voting 1976

4) 1975

5) 1977

In the figures on the following pages, the various indicators have been given, grouped per region. The following regional division has been made.

North

- Braga
- Braganza
- Porto
- Viana do Castelo

Centre

- Aveiro
- Castelo Branco
- Coimbra
- Guarda
- Leiria
- Viseu

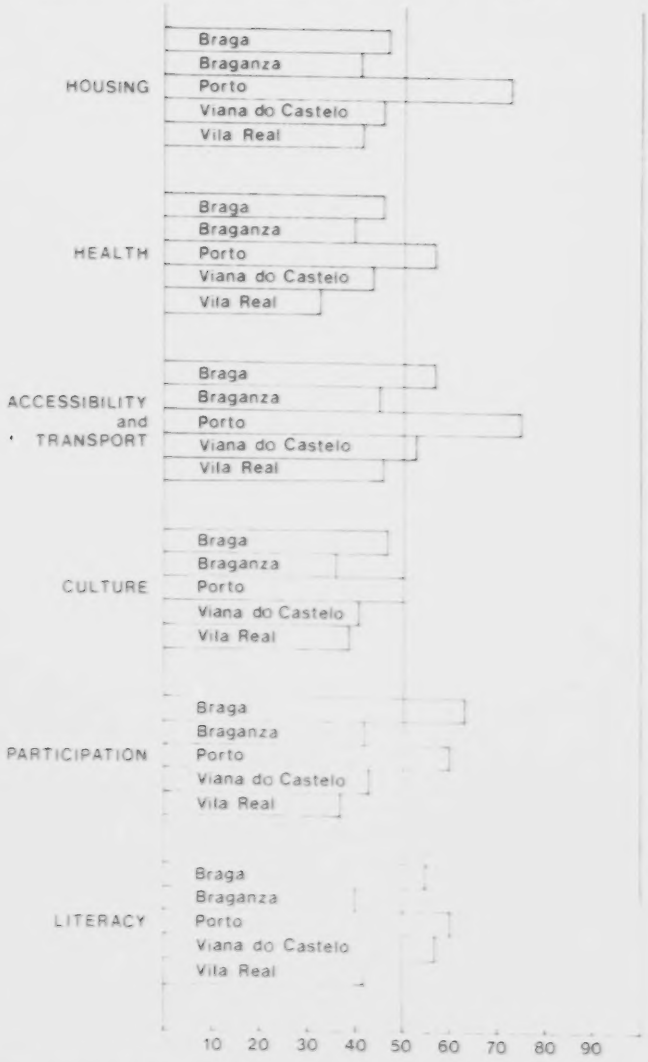
Lisbon area

- Lisbon
- Santarem
- Setubal

South

- Beja
- Evora
- Faro
- Portalegre

Figure 3. Situation Regarding Basic Needs NORTH



The data of the indicators are transformed into T-scales with means of 50 and standard deviations of 10. The T-scores are calculated on the total number of districts of continental Portugal.

Figure 4. Situation regarding Basic Needs CENTRE

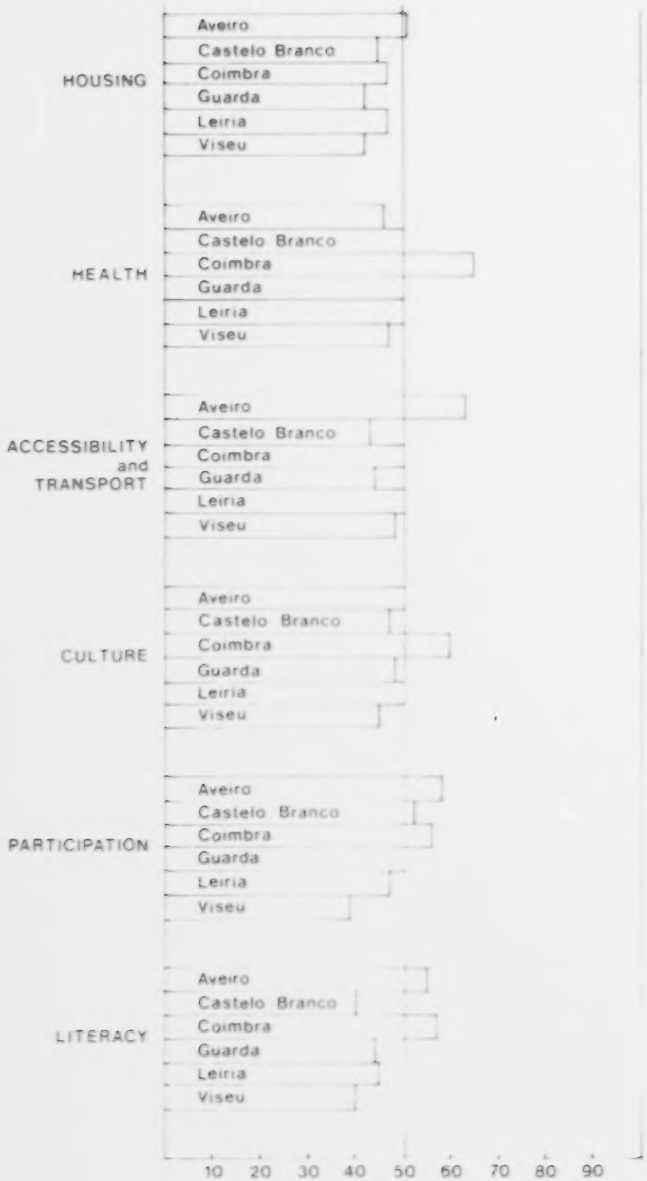


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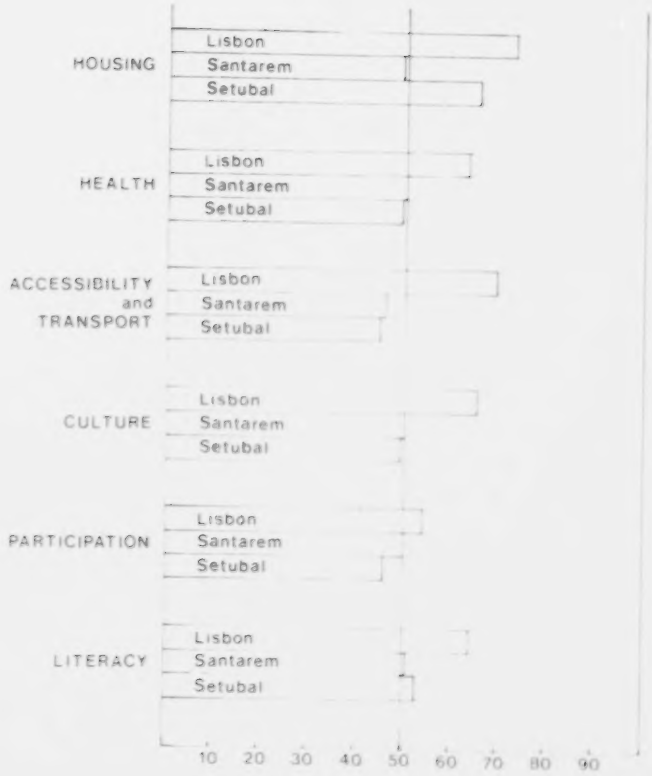
Figure 1. Situation Regarding Basic Needs LISBON AREA



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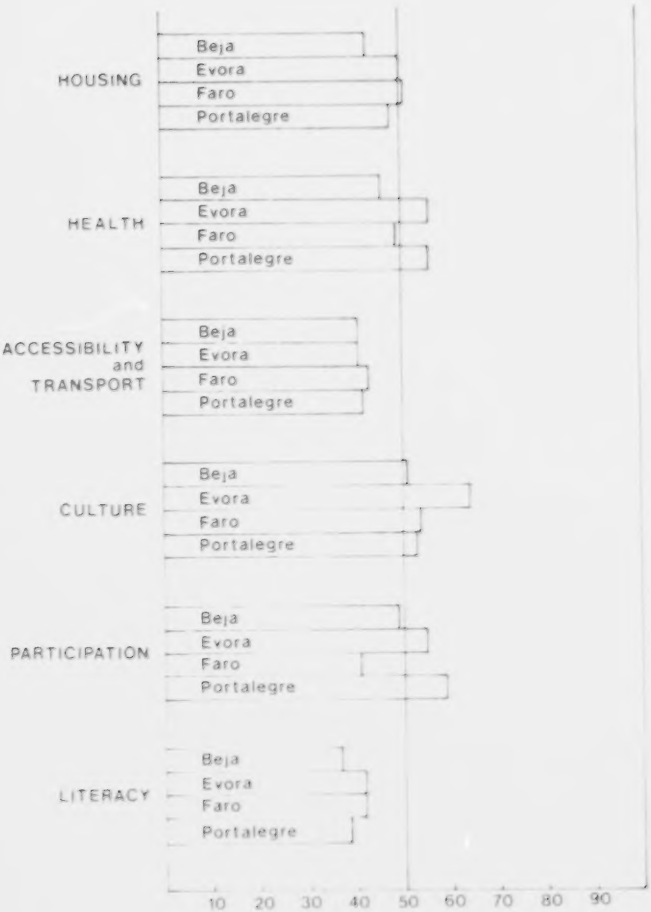


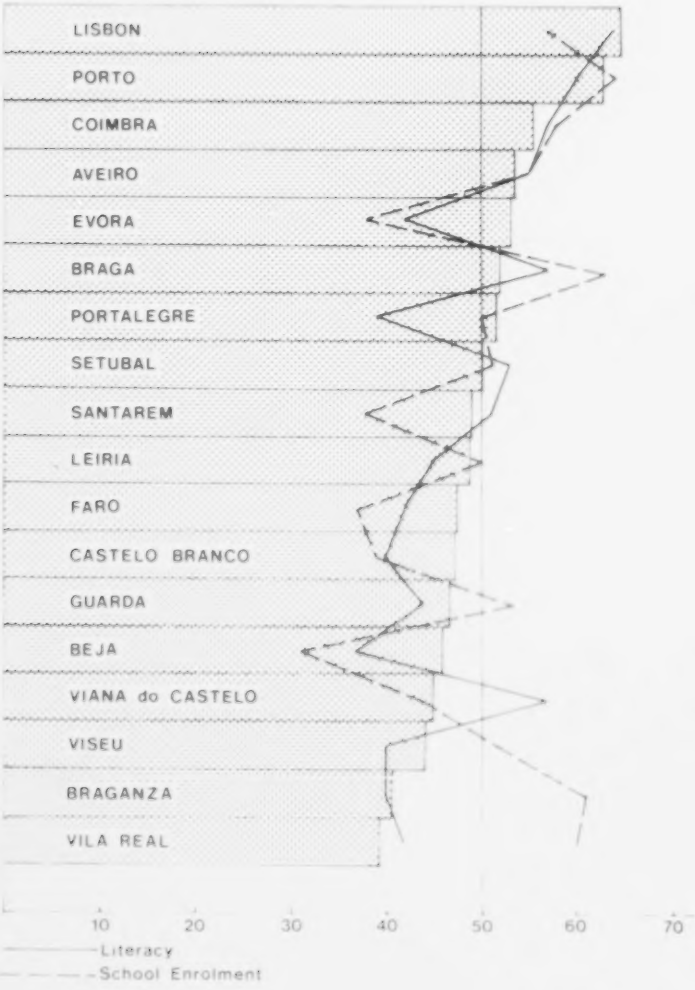
See comment on page 26

In my model I have chosen to treat Education (here expressed by Literacy and School Enrolment) as a dependent variable, while the indicators are independent variables or predictors. Even if important variables like industrialization, production and income for the concept 'development' have not been included, the sum of the stated indicators may serve as a measurement of welfare in a broad sense. In the figure on page 31, the ranking order of the 18 districts in Portugal can be seen, calculated on the summary index of the indicators.

If we accept a critical value of $\bar{X} \pm 0.5$ or expressed in T-scores 50 ± 5, it would mean that the districts that have $T = 55$ or ≥ 45 belong to the 30 per cent most developed districts and the 30 per cent least developed ones, respectively. Using this criterium, Lisbon, Porto and Coimbra are the most developed districts and form a class of its own, while Viseu, Braganza and Vila Real are the least developed districts.

In figure 7 also the variables Literacy and School Enrolment have been included. There is a correlation between the educational variables and the summary index, but it is not a perfect correlation. If there were perfect correlation the values for Literacy and School Enrolment should have been the same as the mean value of the indicators for the various districts. Deviations from the means of the indexes indicate that other variables than those that have formed the indicators may have been involved. A peculiarity in figure 7 is the deviation between Literacy and School Enrolment. This difference is remarkably big for the districts of Braganza and Vila Real. These districts are generally the worst off in Portugal. Illiteracy is also relatively big. But the values for School Enrolment are very high. If the values are true (my figures are mainly drawn from the ILO-reports), then the following interpretation can be made:

In spite of low social and economic standards in Braganza and Vila Real and in spite of high rate of illiteracy, participation in schooling is greater than in most of the other districts.


LISBON
PORTO
COIMBRA
AVEIRO
EVORA
BRAGA
PORTALEGRE
SETUBAL
SANTAREM
LEIRIA
FARO
CASTELO BRANCO
GUARDA
BEJA
VIANA do CASTELO
VISEU
BRAGANZA
VILA REAL
10
20
30
40
50
60
70
Literacy
School Enrolment

In figure 8 the difference is big between the indicators and the educational variables for the districts of Evora, Portalegre, Faro, Castelo Branco and Beja.

Gaspar (1978) is of the opinion that illiteracy is closely related to ownership structures. It is likely that the infrastructure, partly created by the latifundia, has curbed people's possibilities to take part in educational activities.

But infrastructure (transport, communications, access to service etc) is also dependent on such factors as density and the road network. The correlation coefficient of .818 for the indicators Accessibility and Transport, and Literacy, is an extremely strong correlation. (66 per cent of variance is explainable; only 34 per cent is unknown and due to other factors). The correlation between Literacy and the other indicators is significantly lower. A much clearer picture of the multiple effects of the indicators could be obtained by using a step-wise multiple regression analysis. Unfortunately, I have not been able to do this analysis, as I do not have the basic input data. My analysis indicates, however, two close relations that, on the one hand, seem reasonable and, on the other hand, are supported by my data. These two relations can be formulated as below:

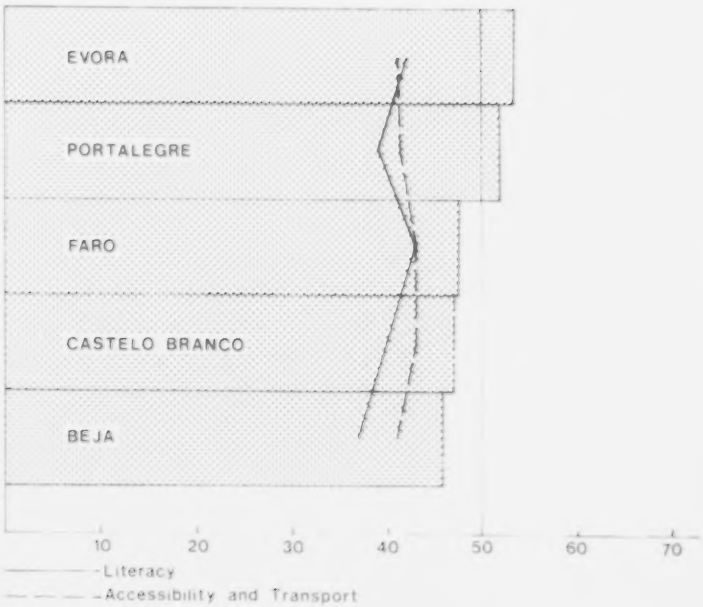
I. Areas with latifundia have a higher rate of illiteracy than other areas. The districts concerned are the ones that have been effected by the Reforma Agraria, for example Beja, Evora, Portalegre, Setubal, eastern part of Santarem, southern part of Castelo Branco and the northern part of Faro.

II. Areas with low density (Accessibility and Transport) show a higher rate of illiteracy.

If both of the conditions exist, the rate of illiteracy becomes particularly high. In the diagram below, Accessibility and Transport, and Literacy are shown for the southern districts and for Castelo Branco. The diagram indicates, on one hand, that the districts have an unusual big number of illiterates (in comparison to the general development) and, on the other

that the indicator Transport and Accessibility almost agrees with Literacy.

Figure 4. Learning value compared to Accessibility and Transport, and Literacy for the districts of Evora, Portalegre, Faro, Castelo Branco and Beja



Productivity indicators

Up to this moment I have worked with indicators that are mainly developed by decisions and activities at a societal level, for example, by central government, district and concelho authorities. In this section, I will analyse production indicators, which, of course, are related to other indicators and which might predicate the level of education.

I have here chosen to examine productivity of labour and land concerning agriculture and industry (Gross Inland Product, GIP), for example an index based on production per inhabitant in each district. The source I have used concerning agricultural productivity are data collected from the National Statistical Institute, 1975: Active Population and Value of Production (1975). The ILO-report, Employment and Basic Needs in Portugal, p 138, 1979. The source for the Gross Inland Product (GIP), is B Freund: Portugal-Länderprofile, 1979, p 20).

A weakness with Freund's GIP-index is that the figures are based on the conditions of 1971. According to ILO (ibid), the relations between the districts in respect of industrialization and productivity have not changed very much during the last decade. As, like in previous analyses, I do not work with absolute numbers, but with T-scores, it is scientifically possible to compare data from different periods. From the three indicators: GIP (Gross Inland Product), Contos per worker, and Contos per hectare, I have formed a summary index of productivity based on the values of the T-scale with a mean of 50 and a standard deviation of 10.

In figure 9, the districts are rank ordered from this index. The two variables Literacy and Enrolment are shown in figure 9.

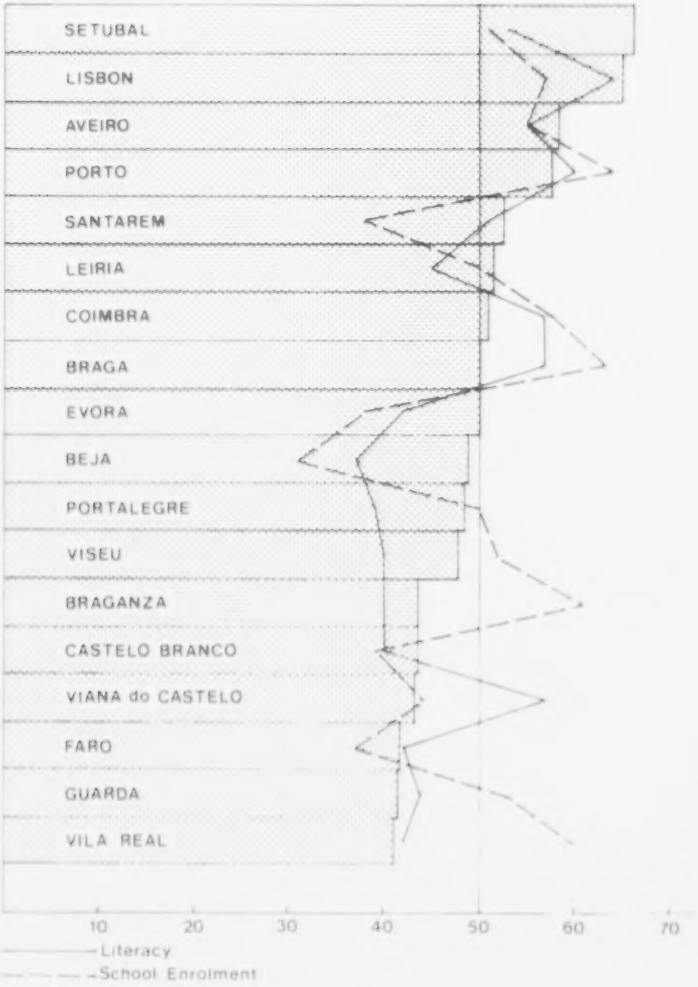
$$T_{sp} \left(T_{sp} \; T_{gip} \; T_{cw} \; T_{ch} \right)$$

where T_{sp} = Mean T-score of productivity

T_{gip} = Mean T-score of GIP (Gross Inland Product)

T_{cw} = Mean T-score of agricultural productivity in contos per worker

T_{ch} = Mean T-score of agricultural productivity in contos per hectare


SETUBAL
LISBON
AVEIRO
PORTO
SANTAREM
LEIRIA
COIMBRA
BRAGA
EVORA
BEJA
PORTALEGRE
VISEU
BRAGANZA
CASTELO BRANCO
VIANA do CASTELO
FARO
GUARDA
VILA REAL
10
20
30
40
50
60
70
Literacy
School Enrolment

Illiteracy regarded as an indicator

As I have mentioned before in this paper, variables expressing social development and economic growth can be both dependent and independent variables. In my analysis, I have treated Education (expressed by Literacy and School Enrolment) as a variable dependent more or less on cooperative predictors. This relationship between dependent and independent variables to describe the correlation between education and socio-economic factors is logical and well-known. But it is equally logical to describe Education as an independent indicator, which, in its turn, influences the socio-economic development positively or negatively.

(The discussion about dependent and independent variables in the social sciences can never be fully and finally determined. Circumstances - chance or unpredicted events - cause changes in the relations. Even if the problem cannot be solved with the help of scientific theory, the question is of great importance when selecting suitable methods for describing and analysing the relations between variables in the overall system of the society).

In order to get a picture of Education as an "isolated" and independent variable, I have made a trend analysis of illiteracy for each district. My trend analysis is based on a regression analysis. I have used the following formula:

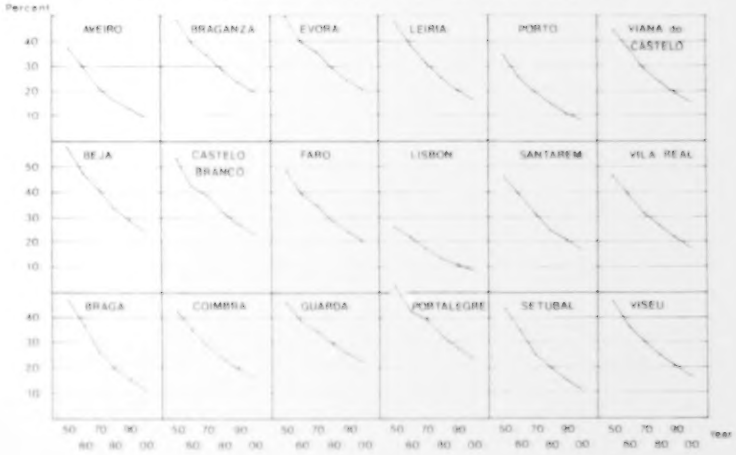
$$\ln y = \ln a + bx$$

This formula is the logarithmic expression of the equation for the exponential curve $y = ae^{bx}$ [transformed to $\ln y = \ln (ae^{bx}) = \ln a + bx$]. Thus, I anticipate that illiteracy follows an exponential development.

(If I had chosen to use a straight line linear model for my bivariate data, my trend analysis should have shown an extremely rapid progression approaching 100 per cent literacy in all districts. The straight linear line regression should have

indicated a development with a mechanical progression which would have been unnatural to describe the development of literacy).

In figure 10, the trends are drawn for each district. When analysing the curves, one must realize that the analysis is characterized by mathematical conditions in the future based on known data. This means that the computer programme produces values that are effects of available data. The computer has, as everybody knows, no possibility to decide whether the input data are true or not. By this, I want to stress that figure 10 should be interpreted with great care.



The curves in figure 10 show two trends:

a. The rapidity of the progression towards literacy

b. Literacy forecasts for 1980, 1990 and year 2000

In general terms, the positive loadings are a) great rapidness and b) high rate of literacy in year 2000 (100 per cent illiteracy rate).

I have therefore transformed the values into T-scores in order to express these two positive aspects as follows:

$$T_{RR} = \frac{\bar{T}_{R1950} - \bar{T}_{R2000}}{\bar{T}_{R1950}} \left(\frac{X_{LRR} - \bar{X}_{LRR}}{\sigma_{LRR}} \right) \cdot 10 + 50$$

where L_{RR} = Literacy rate rapidity

$\bar{T}_{R1950}$ = Literacy rate 1950

$\bar{T}_{R2000}$ = Literacy rate 2000 (based on trend analysis)

T_{LRR} = T-score of literacy rate rapidity

X_{LRR} = Raw score of each district of literacy rate rapidity

$\bar{X}_{LRR}$ = Mean of L_{RR} for all districts

σ_{LRR} = Standard deviation of L_{RR}

The Literacy Rate (predicted) for year 2000 is also transformed into T-score according to the following formula

$$T_{LR2000} = \left(\frac{X_{LR2000} - \bar{X}_{LR2000}}{\sigma_{LR2000}} \right) \cdot 10 + 50$$

where T_{LR2000} = T-score of Literacy Rate Year 2000

X_{LR2000} = Raw Score of Each District of Illiteracy Rate Year 2000

$\bar{X}_{LR2000}$ = Mean of Illiteracy Rate Year 2000

σ_{LR2000} = Standard Deviation of Illiteracy Rate Year 2000

In table 9, the two indexes are shown including their mean values.

Table 9. Literacy Rate Rapidity and Predicted Literacy Year 2000

District	L_{RR} Literacy Rate Rapidity	L_{R2000} Literacy Rate Year 2000	$\bar{x}_{LRR/LR2000}$	Rank
Aveiro	64	64	64	2.5
Beja	42	35	38.5	16
Braga	68	60	64	2.5
Braganza	43	43	43	12
Castelo Banco	42	37	39.5	15
Coimbra	46	51	48.5	8
Évora	42	41	41.5	14
Faro	42	42	42	13
Guarda	38	38	38	17
Leiria	50	50	50	7
Lisbon	50	65	57.5	5
Portalegre	39	35	37	18
Porto	68	67	67.5	1
Santarem	46	48	47	10
Setubal	62	60	61	4
Viana do Castelo	49	52	50.5	6
Vila Real	45	46	45.5	11
Viseu	47	49	48	9

From the results in table 9, it is possible to separate three groups with respect to the probable literacy development.

Group A Forecasted Illiteracy Year 2000 of at most 15 per cent

Porto	7.9 per cent
Aveiro	9.2 per cent
Braga	10.9 per cent
Setubal	11.0 per cent
Lisbon	8.5 per cent

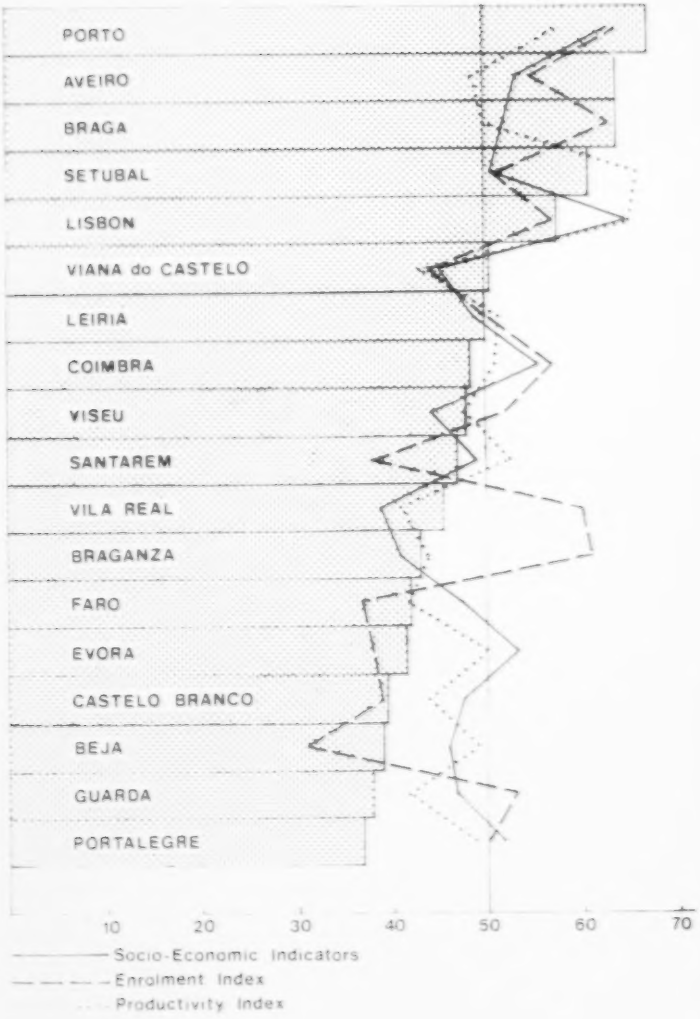
Group B Forecasted Illiteracy Year 2000 of 15 to 19 per cent

Viana do Castelo	15.1 per cent
Leiria	15.8 per cent
Coimbra	15.5 per cent
Viseu	16.4 per cent
Santarem	17.0 per cent
Vila Real	17.7 per cent

Group C Forecasted Illiteracy Year 2000 of more than 19 per cent

Braganza	19.4 per cent
Faro	19.9 per cent
Evora	20.4 per cent
Castelo Branco	22.5 per cent
Beja	23.9 per cent
Guarda	21.9 per cent
Portalegre	23.5 per cent

In the figure on the next page, the Literacy-variable is the base figure. Included are the mean figures for the following indicators: Housing, Health, Accessibility and Transport, Culture and Participation.


PORTO
AVEIRO
BRAGA
SETUBAL
LISBON
VIANA do CASTELO
LEIRIA
COIMBRA
VISEU
SANTAREM
VILA REAL
BRAGANZA
FARO
EVORA
CASTELO BRANCO
BEJA
GUARDA
PORTALEGRE
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Socio-Economic Indicators
Enrolment Index
Productivity Index

As can be seen from figure 11, there is greater agreement between Literacy Trends and Productivity than between Literacy Trends and Socio-economic indicators and Enrolment index.

The correlation, expressed by rank order correlation coefficient is .60, which indicates that the two measurements are clearly related to each other. In some districts, all the four indexes are above the Mean (50). In others, they are all under.

Table 10. Districts with values equal to or more than 50 in four variables: Literacy Trends (L), Socio-Economic Index (SF), Productivity Index (P) and School Enrolment (S).

District	T-score				
	L	SF	P	S	Mean
Porto	67	58	57.5	64	61.6
Aveiro	64	51.7	58.3	55	57.3
Braga	60	50.4	50	63	55.9
Lisbon	65	63.5	65.0	57	62.3

Table 11. Districts with values less than 50 in four variables: Literacy Trends (L), Socio-Economic Index (SF), Productivity Index (P) and School Enrolment (S).

District	T-score				
	L	SF	P	S	Mean
Faro	42	47.6	41.8	37	42.1
Castelo Branco	39.5	47.4	41.8	39	42.4
Beja	38.5	46	48.8	31	41.1

Note that the tables 10 and 11 express homogeneity in the sense that, in table 10, the four districts have values equal to or more than 50 for all the indicators. In the same way, Faro,

Castelo Branco and Beja have values below 50 for all their indicators. This does not mean - as I will show later on - that there does not exist other districts (Braganza, Vila Real, Viseu and Guarda) which are as poor or poorer than those in table 11. What is shown, is the degree of homogeneity.

As our analysis progresses, the most developed and the least developed districts become clear. Before I start summing up and present some recommendations, I would like to introduce still another measurement of welfare. It is the PQLI-index.

The PQLI: Measuring the Level of Physical Well-Being

The Physical Quality of Life Index (PQLI) was introduced in 1977 by the Overseas Development Council, USA, as a measurement of development or welfare.

The PQLI-index uses only three variables:

. Infant mortality rate

. Life expectancy

. Literacy rate

Each variable is transformed into a scale of 0 to 100 in which 0 denotes the worst value and 100 the best.

$$PQLI = \frac{\left(\left(229 - I_{mr}\right) \div 2.22\right) + \left(\left(L_e - 38\right) \div 0.39\right) + L_r}{3}$$

where I_{mr} = Infant mortality rate

L_e = Life expectancy

L_r = Literacy rate

The numbers 229, 2.22, 38 and 0.39 are constants taken from empirical data during the period 1950 - 1977. Thus, the worst infant mortality rate was 229 deaths per thousand live birth in Gabon and the best expected by the year 2000 is 7 deaths per thousand live birth, i.e. Infant Mortality Index will have its maximum by 100 or (229 - 7): 2.22. According to the same principle, 38 is the worst figure for life expectancy (measured in Guinea-Bissau). The best expected is 77 years. Thus the maximum is 100 or (77 - 38): 0.39.

PQLI is a simple measurement of "well-being" and it includes a number of important underlying components.

Greentree and Philips (1976) say:

> It summarizes the results of the total social process. Infant mortality is a sensitive surrogate for the availability of clean water, the condition of the home environment and the well-being of the mother. Life expectancy at age one is representative of nutrition and the general environment outside the home. Literacy is a useful indicator because it is a skill essential to the individual's ability to participate effectively in society and to share in the benefits of economic growth, as well as an indicator of a country's basic level of development.
>
> (Ibid pp 2 - 3)

In my calculations of the PQLI-index, I have used the data from 1970 - 1975.

In table 12 on the next page, Infant Mortality Rate (1973 - 1975), Life Expectancy, and PQLI are shown for each district and for the whole country.

Table 12. *Infant Mortality Rate, Life Expectancy and PQLI (Physical Quality of Life Index) for Portugal*

District	Infant Mortality Rate	Life Expectancy	PQLI
Aveiro	44.84	66.7	77.17
Beja	41.96	67.8	71.62
Braga	49.27	66.1	76.67
Braganza	70.82	64.7	65.77
Castelo Branco	41.04	69.2	74.06
Coimbra	29.66	66.9	80.16
Evora	40.83	68.7	74.52
Faro	34.24	67.7	74.79
Guarda	49.36	66.6	72.35
Leiria	28.34	68.6	77.28
Lisbon	28.77	65.4	81.82
Porto	44.54	64.8	77.27
Portalegre	41.58	68.0	72.61
Santarem	30.93	70.1	80.51
Setubal	29.66	72.4	83.33
Viana do Castelo	27.52	68.6	79.00
Vila Real	70.42	63.4	65.45
Viseu	49.34	66.8	70.82
National Average	39.87	66.6	76.17

It should be observed that the data on which the PQLI is based on are 7 - 11 years old. With trend analysis, the PQLI-index will be about 84 in 1980 for the whole country. It means a probable addition of eight units between 1970 - 1980.

In order to be able to compare PQLI for Portugal with other countries, a few examples will be given below.

Table 13. Physical Quality of Life Index (PQLI) in Portugal and Some Selected Countries

Country	Year	PQLI
Portugal	1970	76[1]
Portugal (trend)	1980	84[2]
Spain	1975	88[3]
France	1975	90[3]
Sweden	1973	95[3]
Yugoslavia	1976	84[4]
Soviet Union	1976	93[4]
USA	1976	94[4]

1) From Gaspar 1978 (Literacy rate)

2) Trend analysis (Equation: y = Ina + Bx)

3) From ILO-report, 1979 (Ibid p 42)

4) From Communique, 1979/4 p 2

In comparison to other European countries, Portugal's PQLI-index is relatively low. This is due to two of the variables on which the PQLI-index is built, namely the Infant Mortality Rate and Illiteracy. Both of these variables have very high values in Portugal. As we can see from table 12 also the range between the districts is big. For only four districts, Coimbra, Lisbon, Santarem and Setubal, the PQLI-index is above 80. These figures are, however, low in comparison to European conditions. PQLI for Poland was 85 in 1960 and 84 for Yugoslavia in 1976. The lowest PQLI-values are for Braganza and Vila Real; they get 65.77 and 65.45 respectively.

In order to be able to compare the PQLI-values for the districts, I have transformed raw scores into T-scores. In figure 12, the districts are rank ordered with regard to their PQLI-indexes.

Figure 12. The Physical Quality of Life Index Transformed into T-scores for Each District

CONCLUSIONS

In my analysis of Basic Needs in Portugal I have studied a number of variables, which have been included in various models. In some of these models, the variables have been dependent; in others they have been independent. Even if certain statistical data are unreliable, and even if the analyses do not provide unambiguous answers, it is still possible to single out the districts that are worst off in respect of socio-economy and welfare.

In the analyses, three areas appear which can be separated due to their typical characteristics.

Region 1

The north-south axis along the coast with the districts of Viana do Castelo, Braga, Porto, Aveiro, Coimbra, Leiria, Santarem, Lisbon and Setubal is the most developed region in Portugal. The development level varies between the districts, but the region is characterized by a high level of industrialization and productivity, relatively low rate of illiteracy and a well developed infrastructure in comparison to the rest of the country.

Region 2

This region consists of the following four interior districts: Vila Real, Braganza, Viseu and Guarda. This is the poorest region in Portugal; in particular the districts of Vila Real and Braganza. They probably belong to the most underdeveloped areas in Europe.

Region 3

This region includes the districts of Alentejo, Castelo Branco and Faro.

The three Alentejo-districts Portalegre, Evora and Beja are rather homogeneous, even if Evora has a clearly higher development level than the other two. I have included Castelo Branco

in this region because the agricultural structure in Castelo Branco is similar to that of Alentejo. (Castelo Branco has also been affected by the Land Reform). Also Faro has been touched by the Land Reform and I have included it in region 3, too.

When initiating development programmes in which education is included, one has to make priorities according to different criteria in order to use one's resources in the most efficient way. In the following table, I have analysed, region by region, the requirements for and the needs of educational inputs and, finally, I have rank ordered districts on the basis of a number of components. I have used an assessment scale of 1 - 5, in which 5 stands for the strongest need. The districts that have been given 3, 4 or 5 are commented upon in the text that follows.

As I have not had access to statistics for concelhos and freguesias, my analysis is based on data for the district level. I am aware that this approach may be a source of errors. The development of the central place may present a wrong picture of the district in question.

I have analysed the level of industrialization of the districts and found that it is in the Coimbra district above all that there might be good reason to suspect that the priority is too low in regard of the actual need of education. This is due to the fact that the district capital Coimbra - with university and industries - dominates the district. The eastern part of the district, in particular the areas in Serra da Estrela, is as poor as Beja and Guarda. The priority stated in table 14 in respect of need for resources for education may, therefore, be somewhat uncertain. But it would have been unscientific, without statistics, to try to make subjective assessments for each district of the influence of the central place.

I still think that the source of errors that I have described is very small and its importance, if any, concerns only the district of Coimbra. I have considered this in the analysis that preceded the prioriting and where my main source was Bobo Freund (Portugal,Länderprofile,Geographische Strukturen, Daten, Entwicklungen, Stuttgart 1979)

Table 14. Priority for Engagement within the Field of Adult Education Based on the Following Components: Housing (Ho), Health (He), Accessibility and Transport (A-T), Productivity (P), Literacy (L), School Enrolment (SE) and Physical Quality of Life Index (PQLI)

Region I Districts	Ho	He	A-T	P	L	SE	PQLI	Priority
Viana do Castelo	46	44	53	43	57	44	57	3
Braga	47	46	57	50	57	63	53	2
Porto	73	51	75	58	60	64	54	2
Aveiro	51	46	63	49	55	58	52	2
Coimbra	47	65	50	51	42	58	60	2
Leiria	47	50	50	52	45	50	54	2
Santarem	49	50	46	53	51	38	60	3
Lisbon	73	63	59	54	53	57	63	1
Setubal	65	49	54	66	53	51	66	2
Region II								
Vila Real	42	33	46	41	42	60	30	5
Braganza	41	40	45	44	40	61	31	5
Viseu	42	47	48	48	40	52	41	4
Guarda	42	50	44	42	44	53	44	4
Region III								
Castelo Branco	45	50	43	44	57	39	47	4
Portalegre	48	56	42	49	39	50	44	4
Evora	50	56	41	50	42	38	48	4
Beja	43	46	41	49	37	31	42	5
Faro	51	44	43	42	42	37	46	4

We can see from table 14 that the regions II and III have been given priority as regards adult education activities. In addition to these regions, which together comprise nine districts, two districts in region I have also been given priority. These

are Viana do Castelo and Santarem. Even if the PQLI-index is high in the two districts (57 and 60 respectively), the school system is weak. This is revealed by the School Enrolment Index, which is 44 and 38 respectively. Viana do Castelo has a productivity Index of 43 and the few industries that exist are located to the district capital Viana do Castelo and, to some small extent, to the market centre Ponte de Lima.

The district of Santarem is very heterogeneous; the western part of the district is affected by Lisbon's industrial belt, the eastern side consists of agricultural units, which, structurally, resemble those in Alentejo. The high values in the various indexes are - for Santarem - due to the well developed industrial area in the western part of the district. School Enrolment is, however, for the whole district the second lowest in Portugal.

The districts given the highest priority have very low values for all the indexes. Without doubt the three weakest districts are Vila Real, Braganza and Beja. When allocating resources for education these three districts must be considered first.

Other districts given high priority are Viseu, Guarda, Castelo Branco, Portalegre, Evora and Faro. For this group, it is difficult to state any priority in between them. However, Viseu, Guarda and Faro are probably worse off than Castelo Branco, Portalegre and Evora.

The [illegible] of Integrated Development

The thinking that the society as a whole can develop only if new resources are put into the sub-systems, of which the society consists, is underlying the concept of integrated development. This means that, if the aim is to increase the rate of literacy in an area, it is normally not enough to carry out a literacy campaign. At the same time, resources must be put into other sectors of the society, too, for example, health, labour market, infrastructure etc. Hence the need for integrated activity programmes, for instance, all activities must be organised in agreement with the needs of the various sectors of the society. The sectors to be included in an integrated programme will

entirely depend on the needs that exist.

The correlation between different development variables and education is quite clear. (See fig 7 - 12).

It is, therefore, reasonable to allocate resources to those sectors of the society that are lagging behind in order to get direct or spin off effects on the level of education. A completely integrated programme should, according to my point of view, contain resources within the following areas.

- ☐ Housing
- ☐ Health
- ☐ Infrastructure, e.g. transport systems and accessibility to service, like, for example, to receive public assistance
- ☐ Industrial and/or agricultural production
- ☐ Literacy

Thus, a full team for an integrated programme should consist of the following specialists:

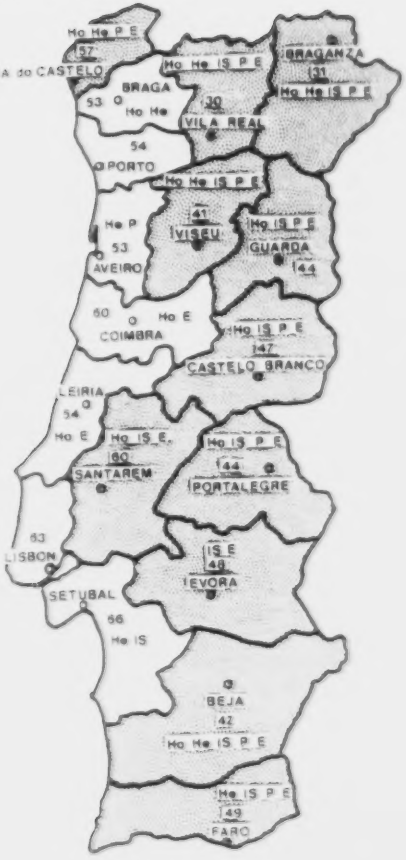
- ● Housing adviser
- ● Doctor/Nurse
- ● Social Welfare Officer/Community Planner
- ● Agricultural Extension Officer
- ● Teacher

For the educational programmes that are being planned to carry out the PNAEBA-plan, it seems realistic to go in for teams put together to respond to a defined need. This means that before an activity is started, a detailed analysis should be made to find out what experts should be included in order to make the integrated programme more efficient.

If we analyse the various needs in the districts that have been given priority in this study, we will require teams put together in various combinations.

On the map (figure 13), I have indicated the most neglected sectors. I have used the same terminology as before and my judgements are based on the analyses that have been made for each component.

Figure 13. The Basic Needs in the Districts



Explanation:

The shaded districts have the highest priority. The PQLI-index is given for each district.

Ho = Housing, He = Health, IS = Infrastructure
P = Productivity, E = Education

There are two key activities that I, finally, would like to stress in respect of integrated programmes; one is flexibility, and the other one is resource steering and control.

This paper has aimed at indicating models for the allocation of resources. The preceding pages should have clearly showed the districts in Portugal that are of immediate need of assistance in order to satisfy basic needs per se and in education. These districts should be given prompt assistance. Experiences from big educational programmes show that government authorities are easily tempted to support activities that are already going on in relatively well developed areas. The argument is that, by further developing such areas, it will result in spin-off effects that are favourable to the weak regions. This hypothesis has, however, not yet been verified. On the contrary, it has been observed that the gaps between poor and well-off areas have increased instead of decreased. In order to offset such effects, the PNAEBA-plan should concentrate on some well planned programmes in the poorest districts.

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